Original Article

doi: 10.16926/par.2019.07.20

Comparison of differences students' viewing in the Czech elementary schools for the deaf in physical education classes with other studies

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Authors' Contribution: A – Study Design, B – Data Collection, C – Statistical Analysis, D – Manuscript Preparation, E – Funds Collection

Abstract

The purpose of this study was to analyze differences in students' viewing in the second stage of elementary schools for the deaf or hard of hearing in physical education classes with other studies. In this study participated 86 students who are deaf or hard of hearing (56 boys and 30 girls; an average age of 14.3 ± 1.4 years). The one-sample and two-sample t-test were used to compare result of our study with results of the populations' studies in the Czech Republic and at Slovakia. All tests were performed at a level of $\alpha = .05$. In the Importance and Demandingness indicator, statistical significance was confirmed. Students in our study considered physical education to be more important (2.02 ± 0.96, t = –2.777; p = 0.007) and demanding (3.23 ± 0.98, t = –3.009; p = 0.003) than students from Czech and Slovak general schools. In comparison of our study with the results of students from Czech general schools, the mean value was lower in the Popularity indicator and Czech students from general schools considered physical education to be more popular than our students. In comparison of small scopes study, statistically significant differences were found, where students in our study view physical education as more demanding (3.23 ± 0.98, t = –2.605; p = 0.010) compared to Slovak students with sensory disabilities. We can conclude that there is a trend where students who are deaf or hard of hearing view physical education as more important and demanding than students from general schools in both the Czech Republic and Slovakia. In addition, Czech students who are deaf or hard of hearing view physical education as more demanding compared to Slovak students with sensory disabilities.

Keywords: physical education, second stage of elementary school, general and special education, deaf or hard of hearing

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Recevied: 25.01.2019; Accepted: 14.02.2019; Published online: 21.08.2019

Cite this article as: Kurkova P. Comparison of differences students' viewing in the Czech elementary schools for the deaf in physical education classes with other studies. Physical Activity Review 2019; 7: 168-174. doi: 10.16926/par.2019.07.20

INTRODUCTION

According to World Health Organization [1] "'hard of hearing' refers to people with hearing loss ranging from mild to severe. People who are hard of hearing usually communicate through spoken language and can benefit from hearing aids, cochlear implants, and other assistive devices as well as captioning. People with more significant hearing losses may benefit from cochlear implants. 'Deaf' people mostly have profound hearing loss, which implies very little or no hearing. They often use sign language for communication." In the Czech Republic, an analysis of available data shows that the number of students who are deaf or hard of hearing, have been no major changes in recent years and their numbers remain almost constant, i.e. around 1.2 thousand (1.6% of the total number of students with disabilities in elementary schools) and the majority are boys [2]. In terms of integrated and special education, the performance indicators that were reported for the school year 2011/2012 in the Statistical Yearbook of Education showed – for the first time – a decrease in the number of students who are deaf or hard of hearing in elementary education in special classes (559) and an increase in the number of individually integrated students (582). In the school year 2017/2018, as many as 689 students were enrolled in individual integration, of which 254 with severe hearing loss, and 484 students were enrolled in special classes, of which 299 with severe hearing loss [3]. This growing trend demonstrates the efforts of interested professionals to promote the individual integration of students who are deaf or hard of hearing to the maximum extent possible.

Elementary education in the Czech Republic is spread over nine years and is divided into the first stage (years 1 to 5) and the second stage (years 6 to 9). All elementary schools for the deaf or hard of hearing take advantage of Section 46(3) of the Education Act [4], which makes it possible to extend school attendance to ten years, upon approval from the ministry. In such a case, the first stage comprises years 1 to 6 and the second stage comprises years 7 to 10. At present, students are educated in thirteen elementary schools for the deaf or hard of hearing. The advantage of these schools is a good didactic quality of teaching, which is adequate to the students' abilities. Another advantage may also be the very good organization of free time in these facilities, with an accent on the specific aspects of communication within this minority population [5]. On the other hand, the disadvantage of this type of education may be the boarding-school nature of education, which removes the child from the natural family environment from an early age, severs ties to the family, minimizes opportunities to gain common experience, and education is isolated from real life [6].

The benefits of a physically active lifestyle are well documented and available to all individuals, regardless of ability or disability, who regularly engage in physical activity. For example, regular engagement in physical activity can help to improve overall health, fitness, and health-related quality of life, while reducing the risk for chronic lifestyle-mediated diseases [7-11]. Physical activity participation for students who are deaf or hard of hearing can be affected by school-based practices experienced during physical education classes and transition services focusing on recreation [12,13]. Furthermore, school-based physical education may be the best setting for individuals who are deaf or hard of hearing to learn about physical activity [6, 14-16]. The Framework Educational Programme for Basic Education [17] noted that one of main goals of physical education is "to independently assess the level of one's own fitness and to physical activity in the daily activity pattern in order to satisfy one's own physical needs and interests, achieve optimal development of fitness and performance,…, and promote health and protect life" (p. 91). In a comparison of the other school subjects among Czech students, it is clear that both Czech girls and boys consider physical education and computers a favorite subject [18]. This finding was confirmed by other study [19], where students who are deaf or hard of hearing preferred mainly sport and computers in their leisure time. In the Czech and Slovak study's [20,21] authors mentioned that students who exhibit a more positive attitude toward physical activity in physical education are more likely to participate in physical activity outside of school. Additionally, active and also well motivated students are more likely to become active adults [22,23]. Also students' feelings and emotions are among the numerous influences on their engagement, and achievement in physical education, and these fluctuate according to contextual factors such as instructional content [24,25].

The objective of this study was to analyze differences in students' viewing in the second stage of elementary schools for the deaf or hard of hearing in physical education classes with other studies.

MATERIAL AND METHODS

Participants

Of the total number of thirteen schools for the deaf or hard of hearing in the Czech Republic, six elementary schools for the deaf or hard of hearing (Brno, Olomouc, Ostrava, Pilsen, Prague, Valašské Meziříčí) agreed to participate in the research. A total of 86 students who are deaf or hard of hearing participated in the questionnaire survey (boys, n = 56; 65.1 %; girls, n = 30; 34.9 %). The average age and standard deviation was 14.3 ± 1.4 years. Within the sample, the majority of students have been deaf or hard of hearing from birth (n = 68; 79.1%). With respect to the severity of hearing impairment (hearing loss expressed in decibels), profound hearing loss including deafness (n = 51; 59.3%) is represented among the students. A compensation aid is used by most students (n = 62; 72.1%), in most cases a hearing aid (n = 49; 79.0%), fewer pupils have a cochlear implant (n = 13; 21.0%). Only those students who were not diagnosed with combined disabilities were included in the research (Table 1).

Data collection

The research and data collection were carried out in April and May 2017 among students who are deaf or hard of hearing in the second stage of elementary schools for the deaf or hard of hearing at the national level. To implement the research, we used a non-standardized structured questionnaire [26]. From this we compiled the final set of twenty-four questions in modified form. For students who are deaf or hard of hearing, when modifying the questionnaire, it was necessary to take into account their ability to concentrate, their fatigue and the comprehensibility of the various items. In the first phase, the questionnaire was consulted with three experts in the field of kinanthropology. The first stage of the questionnaire's verification was completed at a school for the deaf or hard of hearing. Based on feedback and comments from pupils who are deaf or hard of hearing and their teachers, the various items of the questionnaire were adjusted. In collaboration with the Support Centre for Students with Special Needs at the Faculty of Education, Palacký University Olomouc, the various items of the questionnaire were consulted with and subsequently revised by three experts in the field of deaf education with an emphasis on the Czech sign language and the written form of the Czech language understandable to individuals who are deaf or hard of hearing. An adapted text version of the questionnaire in the Czech language was developed, taking into account the language competencies of students who are deaf or hard of hearing. In addition, a version in the Czech sign language was created.

Prior to the start of the actual survey, the purpose of the questionnaire was explained to the students and – through their legal representatives – consent with their participation in the study was obtained in advance. The students completed the questionnaire in the presence of the class tutor and the researcher. Students who are deaf or hard of hearing completed the questionnaire in printed form and, in addition, they had access to a video of each question in the Czech sign language. If necessary, a teacher, an interpreter from/to sign language was available to students in order to avoid any misunderstanding of the questions.

In this study, we compare results of four scale questions with other studies. The scale questions concerning the feelings and opinions of students who are deaf or hard of hearing in physical education classes. Those questions were related to feelings and opinions towards physical education classes and assessed: a) the popularity of physical education; b) the importance of physical education; c) the demandingness of physical education; d) effort in physical education classes. The research had been approved by the Ethics Committee of the Faculty of Education, Palacký University Olomouc (ref. no. 1/2016).

Data analysis

The programme IBM SPSS Statistics (Version 23.0; IBM, Armonk, NY, USA) was used for data processing. The data were described using absolute and relative frequencies, including the mean and standard deviation. The one-sample t-test were used to compare result of our study [12] with results of the populations' studies in the Czech Republic [27] and at Slovakia [26]. The means from these studies were considered as means of the population. Subsequently, the two-sample t-test was used to compare result of our study [12] with small scopes study [28]. All tests were performed at a level of $\alpha = 0.05$.

Table 1. Sample demographic information (N = 86)

Indicators	Boys (n = 56)		Girls (n = 30)		Total (N = 86)	
	n	%	n	%	n	%
Onset of disability						
Since birth	44	78.6	24	80.0	68	79.1
Since age 1	3	5.4	1	3.3	4	4.7
Since age 2	0	0.0	2	6.7	2	2.3
Since age 3	7	12.5	2	6.7	9	10.5
Since age 4	1	1.8	0	0.0	1	1.2
Since age 7	0	0.0	1	3.3	1	1.2
Since age 8	1	1.8	0	0.0	1	1.2
Degree of hearing loss						
Mild	8	14.3	2	6.7	10	11.6
Moderate	13	23.2	12	40.0	25	29.1
Severe	15	26.8	5	16.7	20	23.3
Profound including deafness	20	35.7	11	36.7	31	36.0
Disability aid usage						
Yes	38	67.9	24	80.0	62	72.1
No	18	32.1	6	20.0	24	27.9
Type of disability aid						
Hearing aid	28	73.7	21	87.5	49	79.0
Cochlear implant	10	26.3	3	12.5	13	21.0
Communication						
Czech sign language	11	19.6	5	16.7	16	18.6
Czech language	11	19.6	8	26.7	19	22.1
Combination	34	60.7	17	56.7	51	59.3

RESULTS

The compared variables were the mean values in all studied indicators: Popularity, Importance, Demandingness, and Effort.

In a comparison of our sample with population's studies in the Czech Republic and at Slovakia – one-sample t-test, in the Importance and Demandingness indicator, statistical significance was confirmed (Table 2). Students in our study scored the lower mean values in the importance indicator (2.02 ± 0.96, t = –2.777; p = 0.007) and the lower mean values in the Demandingness indicator (3.23 ± 0.98, t = –3.009; p = 0.003) in a comparison with Czech and Slovak studies. Students in our study considered physical education to be more important and demanding than students from Czech and Slovak general schools. In comparison of our study with the results of students from Czech general schools, the mean value was lower in the Popularity indicator and Czech students from general schools considered physical education to be more popular than our students.

Using the two-sample t-test, a comparison of small scopes study with our overall sample was performed (Table 3). In the Demandingness indicator, statistically significant differences were found, where students in our study view physical education as more demanding compared to Slovak students with sensory disabilities (3.23 ± 0.98, t = –2.605; p = 0.010).

Table 2. Comparison of our study (N = 86) with populations studies in the Czech Republic (N = 3,108) and at Slovakia (N = 817)

Indicators	Czech students[1] Average ± SD	Slovak students[2] Average	t	p	Czech students[3] Average	t	p
Popularity	2.00 ± 0.91	1.92	0.818	0.416	1.65	3.577	**0.001**
Importance	2.02 ± 0.96	2.31	–2.777	**0.007**	2.80	–7.522	**<0.0001**
Demandingness	3.23 ± 0.98	3.55	–3.009	**0.003**	4.23	–9.455	**<0.0001**
Effort	2.01 ± 0.80	2.15	–1.595	0.114	1.92	1.056	0.294

[1]Czech students who are deaf/hard of hearing [21]; [2]Slovak students without disabilities [25]; [3]Czech students without disabilities[26]; SD – standard deviation; t – test statistic for the one-sample t-test; p – significance, if the p-value was lower than 0.05, we considered the differences to be statistically significant and the p-value is highlighted in bold.

Table 3. Comparison of our study (N = 86) with small scopes study at Slovakia (N = 70)

Indicators	Czech students[1] Average ± SD	Slovak students[2] Average ± SD	t	p
Popularity	2.00 ± 0.91	1.87 ± 0.80	0.941	0.348
Importance	2.02 ± 0.96	1.90 ± 0.87	0.833	0.406
Demandingness	3.23 ± 0.98	3.64 ± 0.98	–2.605	0.010
Effort	2.01 ± 0.80	2.20 ± 0.88	–1.396	0.165

[1]Czech students who are deaf/hard of hearing [21];]; [2]Slovak students without disabilities [25]; SD – standard deviation; t – test statistic for the one-sample t-test; p – significance, if the p-value was lower than 0.05, we considered the differences to be statistically significant and the p-value is highlighted in bold.

DISCUSSION

In a comparison of students who are deaf or hard of hearing from our study with a Czech study of general students [27] showed statistically significant differences. The mean value was lower in the Popularity indicator and Czech students from general schools considered physical education to be more popular than our students. These findings were also confirmed in the other Czech study [29]. Authors confirmed a statistically significant difference in the attitude of general students towards physical education, where students who considered physical education as popular school subject showed a higher degree of physical activity and a more positive attitude to implementing physical education [29]. Our results also confirmed Cyprian study [30], where the positive attitude in physical education in the domain enjoyment and perceived usefulness in Cypriot students were found. We can conclude that there is a trend where students who are deaf or hard of hearing view physical education as more important and demanding than students from general schools in both the Czech Republic and Slovakia.

Furthermore, in our comparison of the mean values for the total sample in the Demandingness indicator, statistically significant differences were found in that students in our study considered physical education to be more demanding than students from Czech and Slovak general schools [26,27]. In addition, statistically significant differences were also found in that students in our study view physical education as more demanding compared to Slovak students with sensory disabilities [28]. On the other hand, Slovak students with sensory disabilities considered physical education to be more popular than of our students who are deaf or hard of hearing [28].

In comparison of our study with the results of the Slovak study of general students [26], statistically significant differences were found in the Importance indicator, where our students who are deaf or hard of hearing achieved lower mean values, which means that our students rate physical education as more important. Contrary results in the small scope study were found in the Importance indicator [31,32], where students with disabilities or orphan students achieved higher mean values. The reason for this differences is fact that the advantage of these schools is a good didactic quality of teaching, which is adequate to the students' abilities [6]. Additionally, another advantage may also be

the very good organization of free time in these facilities, with an accent on the specific aspects of communication within this minority population [5-6]. Other possible explanation for this finding may be changes in student's physical activity interest [33].

CONCLUSION

In the present study, we have compared the differences in students' viewing in the second stage of elementary schools for the deaf or hard of hearing in physical education classes with other studies. We can conclude that there is a trend where students who are deaf or hard of hearing view physical education as more important and demanding than students from general schools in both the Czech Republic and Slovakia. In addition, Czech students who are deaf or hard of hearing view physical education as more demanding compared to Slovak students with sensory disabilities.

Physical education plays a significant preventive role in terms of education towards healthy lifestyles in across the young populations including those who receiving special education. That is why adequate attention needs to be given to its further study.

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